



Set Up and Monitor Your Network View

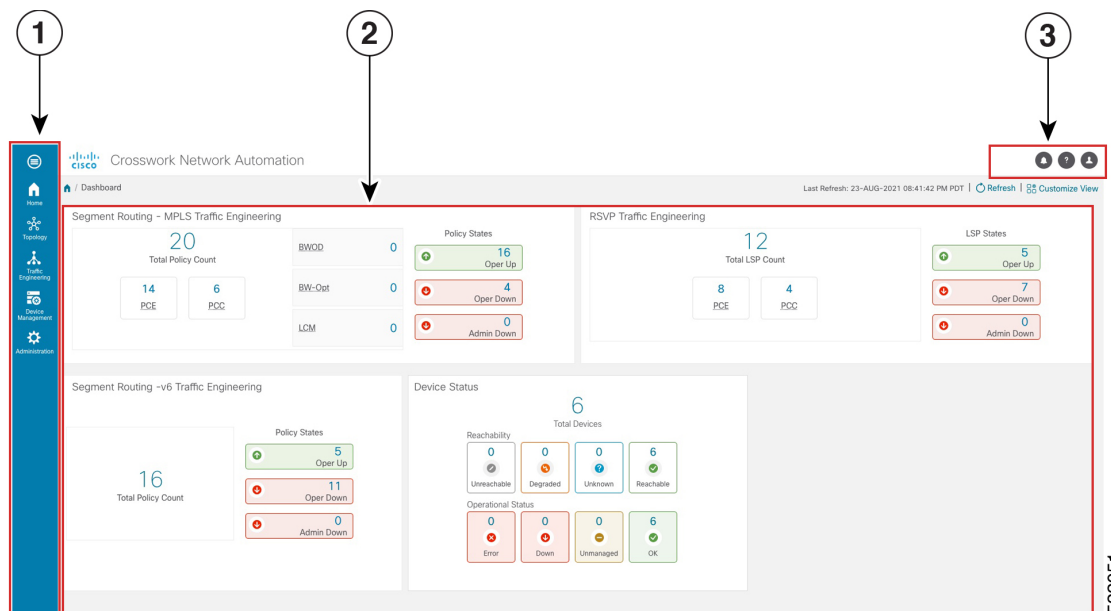
Familiarize yourself with the UI and set up your network view before managing SR policies and RSVP-TE tunnels. This section contains the following topics:

- [Get a Quick View in the Dashboard, on page 1](#)
- [View Devices and Links on the Topology Map, on page 2](#)
- [Use Device Groups to Filter Your Topology View, on page 9](#)
- [Customize Map Display Settings, on page 14](#)
- [Configure Timeout Settings, on page 15](#)
- [Save Topology Views for Easy Access, on page 15](#)

Get a Quick View in the Dashboard

The Home page displays a customizable collection of dashlets which provide an at-a-glance operational summary of the network being managed, including reachability and operational status of devices. Each dashlet represents different types of data belonging to the same category.

Figure 1: Crosswork Home page



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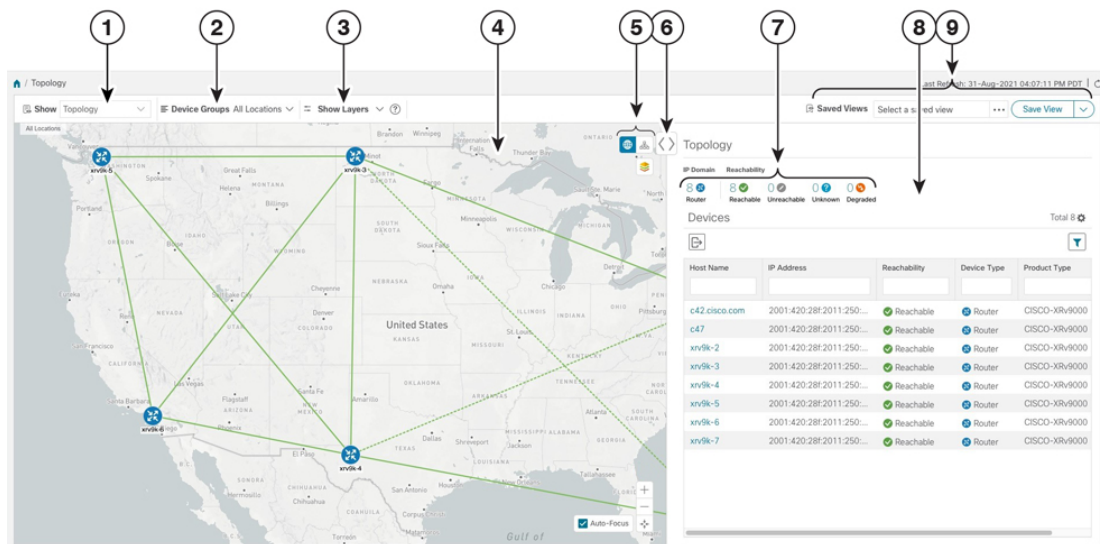
Callout No.	Description
1	Main Menu: The main menu allows you to navigate to installed Cisco Crosswork applications and device management and administrative tasks. Menu options may look slightly different depending on what Cisco Crosswork applications are installed.
2	Dashlets: Information varies depending on what Cisco Crosswork applications are installed. <ul style="list-style-type: none"> To drill down for more information within a dashlet, click on a value. A window appears displaying only the filtered data you clicked on. To add or change the layout of dashlets, click Customize View. Move the dashlets to your desired layout and click Save.
3	Settings icons: <ul style="list-style-type: none"> The Alerts icon notifies you of any current error conditions related to the system operations which require attention, and provides a link to detailed information about those conditions. The Events icon notifies you of new events related to system operation, and also provides access to the history of all system events. The About icon displays the current version of the Cisco Crosswork product. The User Account icon lets you view your username, change your password, and log out.

View Devices and Links on the Topology Map


To view the network topology map, from the main menu choose **Topology**.




For more information, see [View Device and Link Details](#), on page 4.

Figure 2: Cisco Crosswork UI and Topology Map



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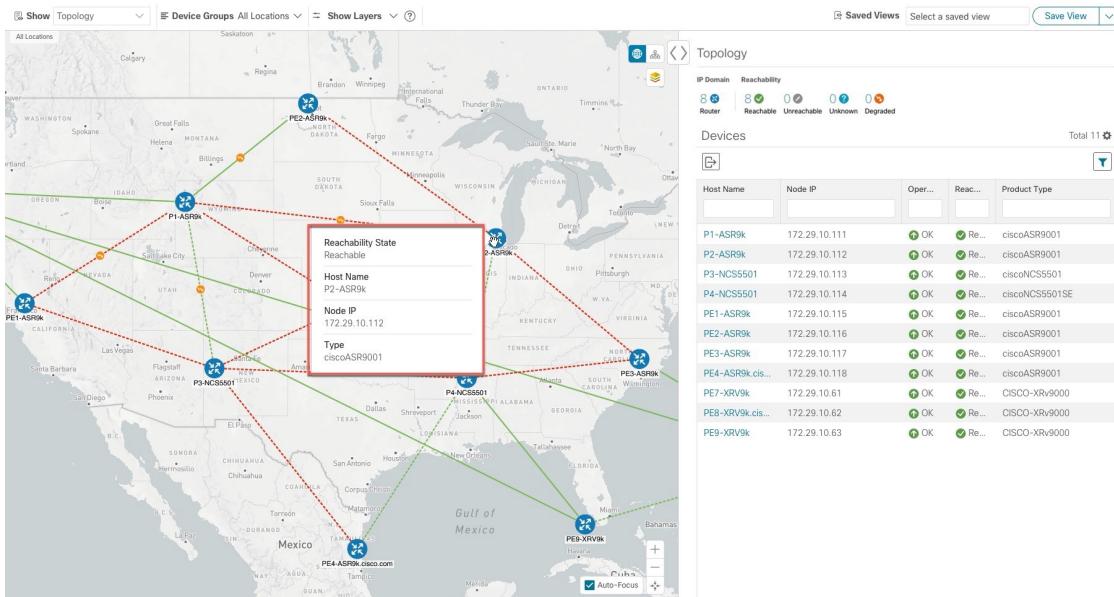
Callout No.	Description
1	<p>Topology Map View: From the Show drop-down list, click the option that displays the data that you would like to see on the map.</p> <p>If Topology is selected, devices and links in the network are displayed.</p> <p>If Traffic Engineering is selected, TE tunnel information is displayed. For more information on the Traffic Engineering topology map, see View SR-MPLS and SRv6 Policies on the Topology Map and View RSVP-TE Tunnels on the Topology Map.</p>
2	<p>Device Groups: From the drop-down list, click the group of devices you want displayed on the map. All other device groups will be hidden.</p>
3	<p>Show Hide: From the drop-down list, click the network layers you want displayed on the map. All devices and links that belong to the selected layers are then displayed. By default, all layers are displayed.</p>
4	<p>Topology Map: The network topology can be displayed on a logical map or a geographical map, where the devices and links are shown in their geographic context. From the map, you can drill down to get detailed information about devices and links.</p> <p>Devices:</p> <ul style="list-style-type: none"> • To view a device configuration summary, hover the mouse cursor over the device icon. A pop up window displaying the host name, state, node ID, and device type appears. • To view device details, click on the device icon. • If devices are in close physical proximity, the geographical map shows them as a cluster. <p>The number in a blue circle () indicates the number of devices in the cluster. Displaying devices in this manner helps prevent overlap and clutter on the map.</p> <p>Links:</p> <ul style="list-style-type: none"> • A solid line indicates a <i>single link</i> between two devices. If there is more than one link between two devices, or between a device and a cluster of devices, the line is shown dashed instead. A dashed line indicates an <i>aggregated</i> link that represents more than one link, or the use of multiple protocols (for example, IPv4 and IPv6) on the same physical link. • A and Z indicates headend and endpoint, respectively. • To view link information details, click on the link. <p>Note Although aggregated, dual stack links show as one single line.</p>

Callout No.	Description
5	<p>: The logical map shows devices and their links, positioned according to an automatic layout algorithm, ignoring their geographical location. You can change the layout algorithm.</p> <p>: The geographical map shows single devices, device clusters, links, and tunnels, superimposed on a map of the world. Each device location on the map reflects the device's GPS coordinates (longitude and latitude) as defined in the device inventory.</p> <p>: The Display Preferences window allows you to change display settings for devices, links, utilization, Flexible Algorithms, and TE tunnel metrics.</p>
6	Expand/Collapse/Hide Side Panel: Expand or collapse the contents of the side panel. Close the side panel to get a larger view of the topology map.
7	The Mini Dashboard provides a summary of the IP Domain and device reachability status. If filters are applied, the Mini Dashboard is updated to reflect what is displayed in the Devices table.
8	The content of this window changes depending on what Show is set to for the Topology Map and if you have selected to view more information on a device, link, SR-MPLS policy, SRv6 policy, or RSVP-TE tunnel.
9	Saved Custom Map Views: Lets you create a named custom view using the settings and layout for your current map, settings of the tables saved in the saved views, or display a custom view you have created previously. It also saves any filters applied to the Devices and Traffic Engineering tables.

View Device and Link Details

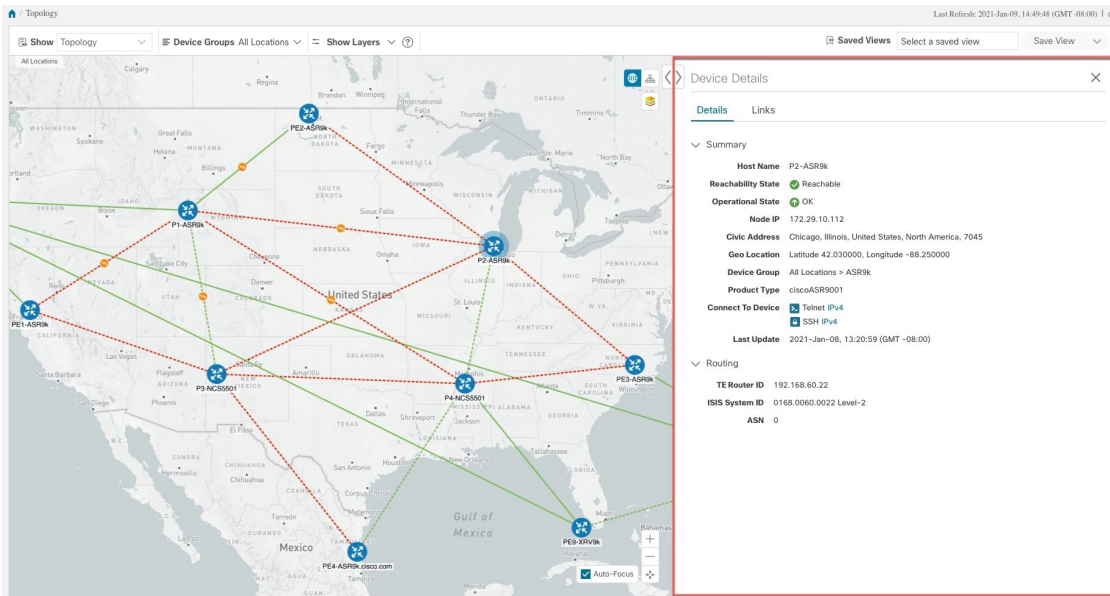
This example shows how you can view device and link details (including Link Aggregation Group (LAG) details, see Step 6) using the topology map.

-
- Step 1** From the main menu choose **Topology** or **Traffic Engineering > Traffic Engineering**.
- Step 2** To quickly view the host name, reachability state, IP address and type of device, hover the mouse over the device icon.



Step 3 To view more device details, click on the device icon.

a) The following examples show the Device details from the Topology map.



In a multiple IGP setup, you can also view all the IGP, IS-IS, and OSPF processes in the Routing details. See the following examples:

Figure 3: Multiple IGP: OSPF Processes

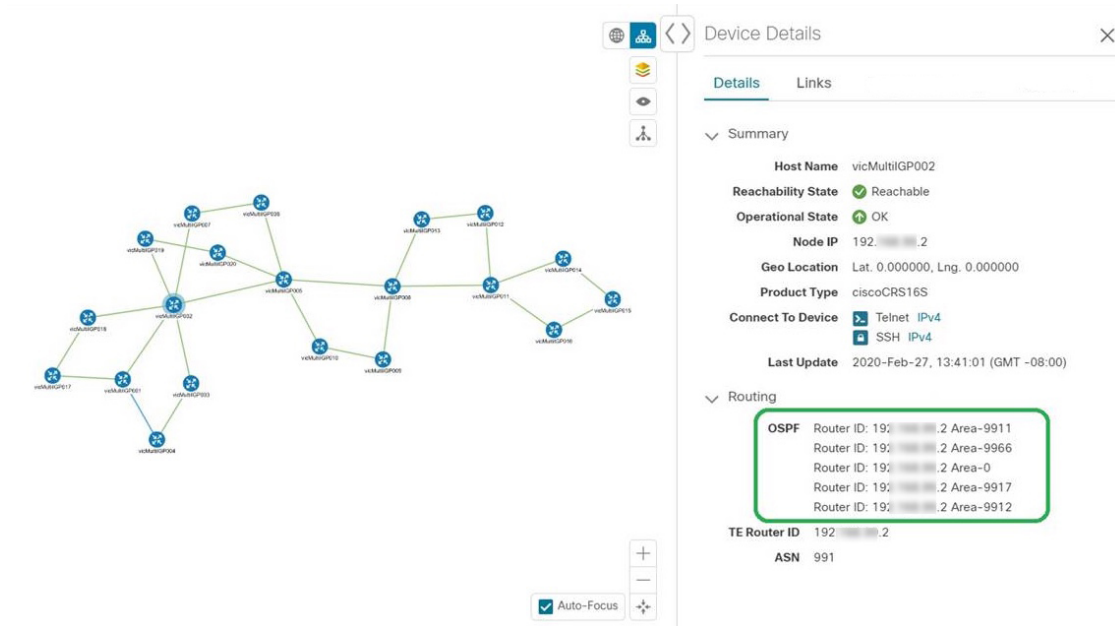


Figure 4: Multiple IGP: ISIS Processes

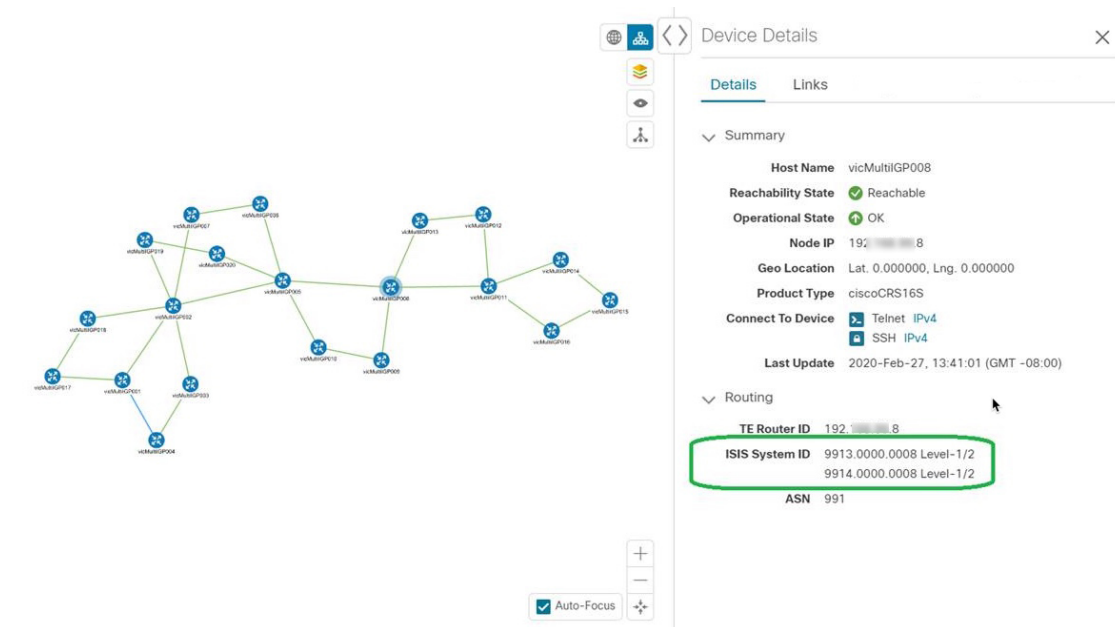
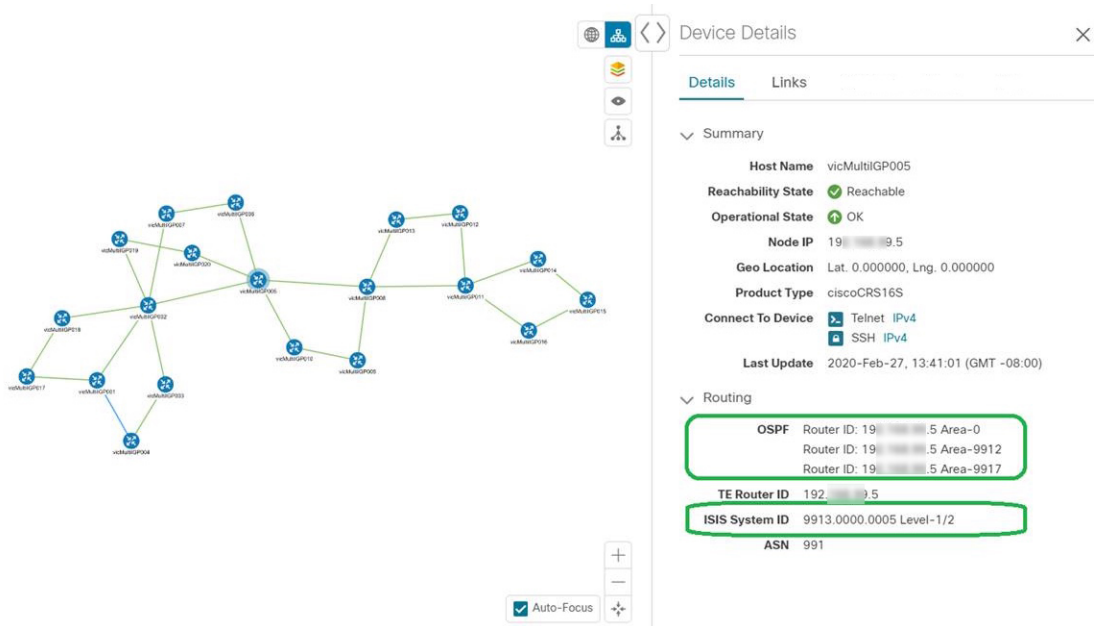
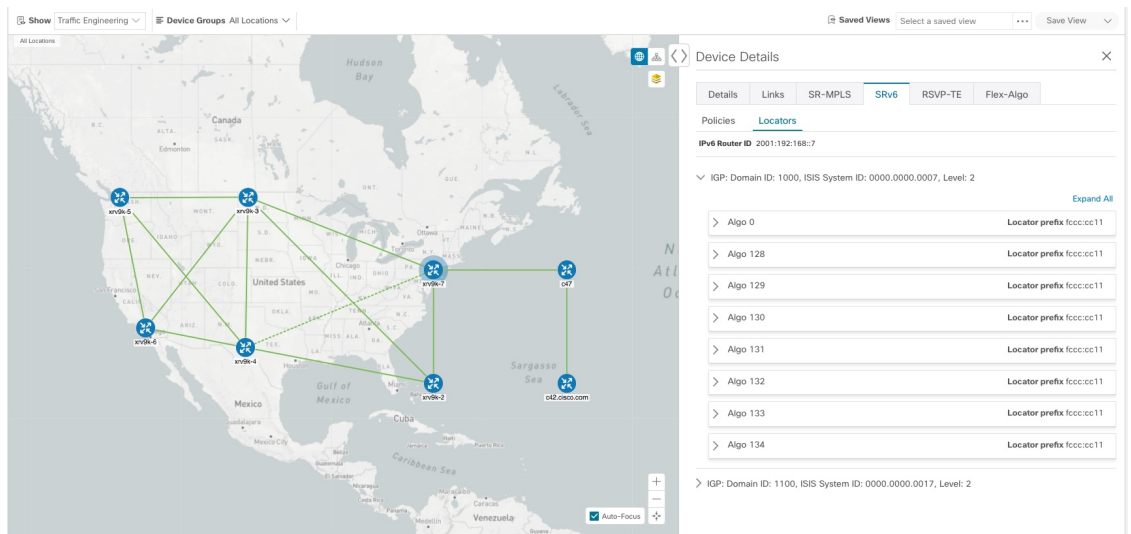


Figure 5: Multiple IGP: OSPF and ISIS Processes



- b) The following example shows additional Traffic Engineering Device details (SR-MPLS, SRv6, RSVP-TE, and Flexible Algorithm tabs) from the Traffic Engineering map. In this particular example, SRv6 Locators are listed for two domains.



Step 4 To view links on the device, click the **Links** tab and expand the right panel to see all the link details.

View Device and Link Details

Show Topology Device Groups All Locations Saved Views Select a saved view Save View

Device Details

Details Links

Links on Device P2-ASR9k

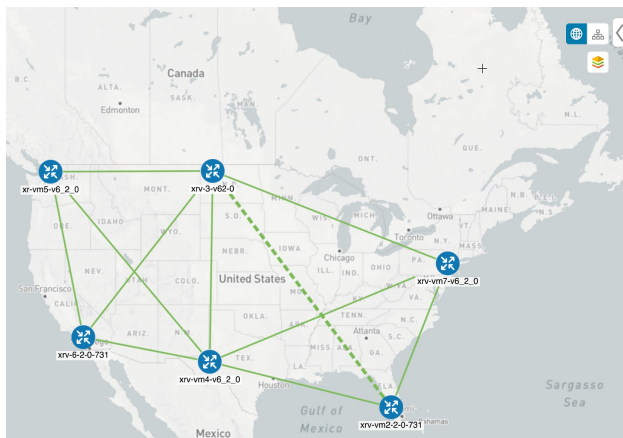
Total 14

State	Link Type	A Side Interface	Z Side Interface	A Side Utilization	Z Side Utilization
🟢	L3 ISIS IPV4	GigabitEthernet0/0/0/2	GigabitEthernet0/0/0/3	0% (0Bps/1Gbps)	15.35% (153.5Mbps/1Gbps)
🟢	L2 LLDP	GigabitEthernet0/0/0/2	GigabitEthernet0/0/0/3	0% (0Bps/1Gbps)	15.35% (153.5Mbps/1Gbps)
🟢	L3 ISIS IPV4	GigabitEthernet0/0/0/4	GigabitEthernet0/0/0/2	20.34% (203.4Mbps/1Gbps)	0% (0Bps/1Gbps)
🟢	L2 LLDP	GigabitEthernet0/0/0/4	GigabitEthernet0/0/0/2	20.34% (203.4Mbps/1Gbps)	0% (0Bps/1Gbps)
🟢	L2 CDP	GigabitEthernet0/0/0/1	GigabitEthernet0/0/0/3	0% (0Bps/1Gbps)	22.39% (223.9Mbps/1Gbps)
🟢	L3 ISIS IPV4	GigabitEthernet0/0/0/3	GigabitEthernet0/0/0/7	8.14% (81.4Mbps/1Gbps)	0% (0Bps/1Gbps)
🟢	L2 LLDP	GigabitEthernet0/0/0/3	GigabitEthernet0/0/0/7	8.14% (81.4Mbps/1Gbps)	0% (0Bps/1Gbps)
🟡	L2 LLDP	GigabitEthernet0/0/0/1	GigabitEthernet0/0/0/3	0% (0Bps/1Gbps)	22.39% (223.9Mbps/1Gbps)
🟢	L3 ISIS IPV4	GigabitEthernet0/0/0/5	GigabitEthernet0/0/0/6	0% (0Bps/1Gbps)	0% (0Bps/1Gbps)
🟢	L2 CDP	GigabitEthernet0/0/0/5	GigabitEthernet0/0/0/6	0% (0Bps/1Gbps)	0% (0Bps/1Gbps)
🟢	L3 ISIS IPV4	GigabitEthernet0/0/0/2	GigabitEthernet0/0/0/4	0% (0Bps/1Gbps)	7.33% (73.3Mbps/1Gbps)
🟢	L2 LLDP	GigabitEthernet0/0/0/5	GigabitEthernet0/0/0/6	0% (0Bps/1Gbps)	0% (0Bps/1Gbps)
🟡	L2 LLDP	GigabitEthernet0/0/0/2	GigabitEthernet0/0/0/4	0% (0Bps/1Gbps)	7.33% (73.3Mbps/1Gbps)
🟢	L3 ISIS IPV4	Bundle-Ether9	Bundle-Ether9	0% (0Bps/1Gbps)	22.39% (223.9Mbps/1Gbps)

Step 5 Collapse the side panel and close the **Device Details** window.

Step 6 Click on a dashed line. A dashed line indicates an aggregated link that represents more than one link.

Note Dual stack links (although aggregate) are shown as one single line.



Links

Total 5

State	Link Type	A Side Interface	Z Side Interface
🟢	L3 ISIS IPV6	GigabitEthernet0/0/0/1	GigabitEthernet0/0/0/1
🟢	L2 LLDP	GigabitEthernet0/0/0/6	GigabitEthernet0/0/0/6
🟢	L3 ISIS IPV4	GigabitEthernet0/0/0/1	GigabitEthernet0/0/0/1
🟢	L2 LLDP	GigabitEthernet0/0/0/1	GigabitEthernet0/0/0/1
🟢	L2 LAG	Bundle-Ether2	Bundle-Ether2

To view different bundle members and member details in a Link Aggregation Group (LAG), confirm that LAG discovery is enabled (**Administration > Settings > System Settings tab > Discovery > LAG** checkbox):

Note It takes a few minutes for LAG collection to complete after LAG discovery is enabled.

a) Click on a LAG link. For example:

Links

Total 2

State	Link Type	A Si...	Z Si...	A Si...	Z Si...
Up	L2 LAG	Bundl...	Bundl...	0% (...)	0% (...)
Up	L2 CDP	Gigabi...	Gigabi...	0% (...)	0% (...)

b) Click the **Members** tab. In this example, only one link is displayed.

Link Details

Summary **Members**

Total 1

State	Link Type	A Si...	Z Si...	A Si...	Z Si...
Up	L2 LAG MEM...	Gigabi...	Gigabi...	0% (...)	0% (...)

c) Click the LAG member link.

Link Details

Summary

Name GigabitEthernet0/0/0/3-GigabitEthernet0/0/0/3
State Up
Link Type L2 LAG MEMBER
Last Update 25-Mar-2021 05:29:32 AM GMT+2

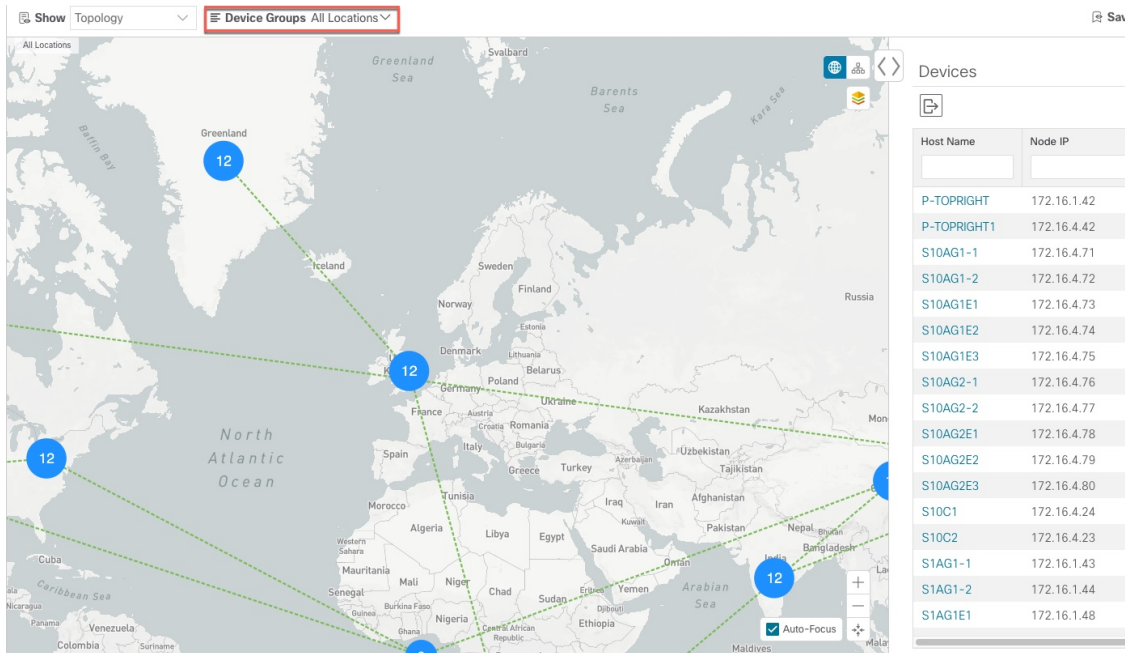
	A Side	Z Side
Node	P-BOTTOMRIGHT-L2	P-BOTTOMLEFT-L2
TE Router ID	101.101.101.4	101.101.101.3
IF Name	GigabitEthernet0/0/0/3	GigabitEthernet0/0/0/3
IF Description	GigabitEthernet0/0/0/3	GigabitEthernet0/0/0/3
Type	ETHERNETCSMACD	ETHERNETCSMACD
Utilization	0% (0Bps/1Gbps)	0% (0Bps/1Gbps)

Use Device Groups to Filter Your Topology View

To help you identify, find, and group devices for a variety of purposes, you can create Device Groups. The Device Group window (**Device Management > Groups**) displays all devices and device groups they belong to. By default, all devices initially appear in the **Unassigned Devices** group.

This example walks you through how Device Grouping works in the geographical and logical maps.

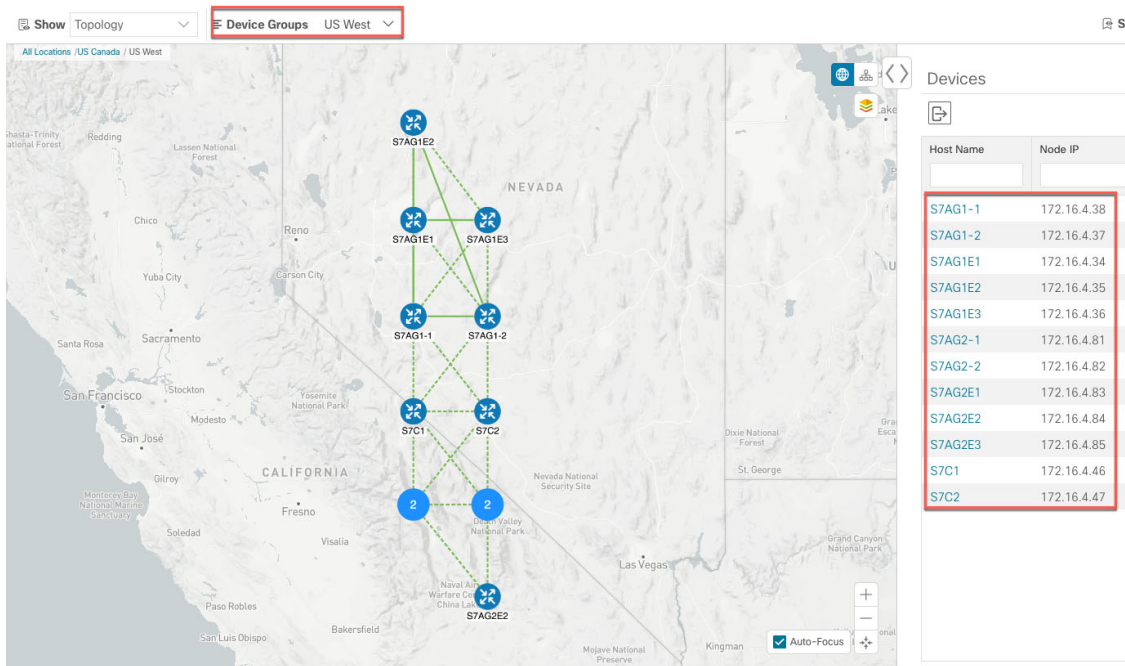
Step 1 From the main menu, choose **Topology**. By default, only devices that have Geo Location set will appear on the geographical map.



Devices


Host Name	Node IP
P-TOPRIGHT	172.16.1.42
P-TOPRIGHT1	172.16.4.42
S10AG1-1	172.16.4.71
S10AG1-2	172.16.4.72
S10AG1E1	172.16.4.73
S10AG1E2	172.16.4.74
S10AG1E3	172.16.4.75
S10AG2-1	172.16.4.76
S10AG2-2	172.16.4.77
S10AG2E1	172.16.4.78
S10AG2E2	172.16.4.79
S10AG2E3	172.16.4.80
S10C1	172.16.4.24
S10C2	172.16.4.23
S1AG1-1	172.16.1.43
S1AG1-2	172.16.1.44
S1AG1E1	172.16.1.48

Step 2 From the **Device Group** drop-down list select a group (US West). Only the devices in that group and related links are displayed on the geographical map. Note that the Devices table has also been filtered to list only those devices in the group.



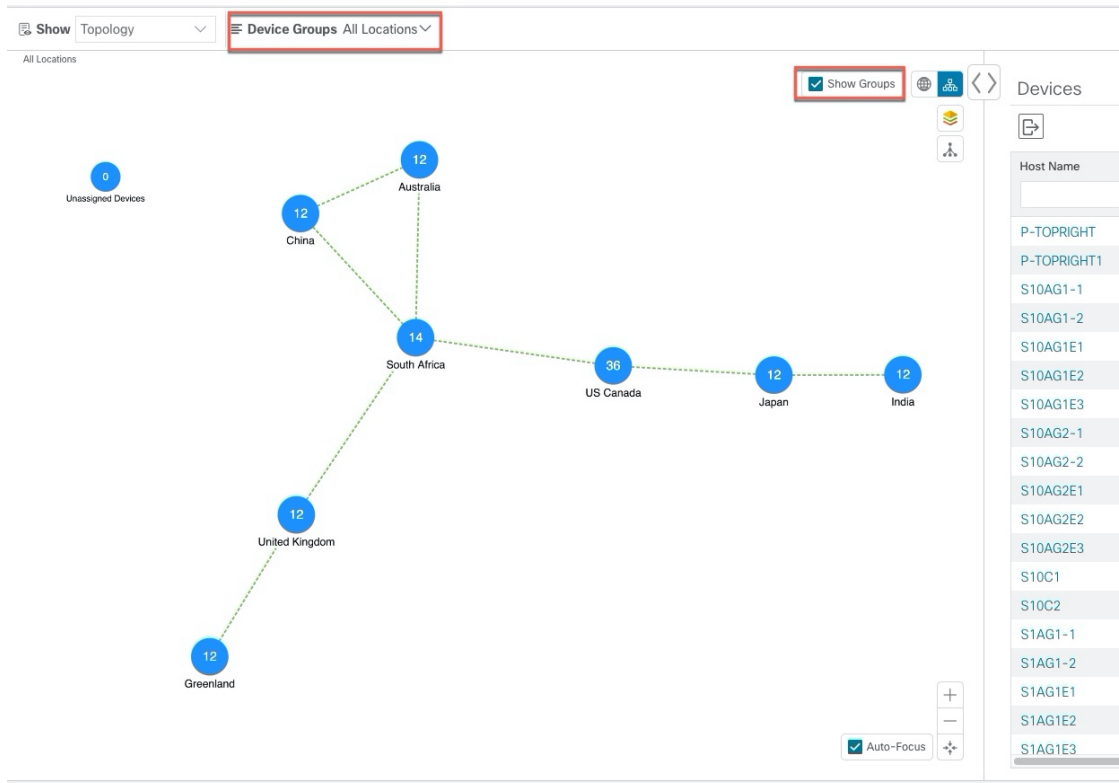
Devices

Host Name	Node IP
S7AG1-1	172.16.4.38
S7AG1-2	172.16.4.37
S7AG1E1	172.16.4.34
S7AG1E2	172.16.4.35
S7AG1E3	172.16.4.36
S7AG2-1	172.16.4.81
S7AG2-2	172.16.4.82
S7AG2E1	172.16.4.83
S7AG2E2	172.16.4.84
S7AG2E3	172.16.4.85
S7C1	172.16.4.46
S7C2	172.16.4.47

Step 3 Click .

Step 4 From the **Device Group** drop-down list, select **All Locations** and check **Show Groups** if it is not already checked. Note that you can see all device groups in this view. Device groups can be seen in this way only within the logical map.

Note If **Show Groups** checkbox is de-selected, all the device groups are expanded, and could lead to a cluttered map.



Step 5 Click the US West group. Again, only devices that belong to this group are shown in the topology map and the Devices table.

The screenshot shows a network topology map with various devices connected. On the right, there is a 'Devices' table listing the following information:

Host Name	Node IP
S7AG1-1	172.16.4.38
S7AG1-2	172.16.4.37
S7AG1E1	172.16.4.34
S7AG1E2	172.16.4.35
S7AG1E3	172.16.4.36
S7AG2-1	172.16.4.81
S7AG2-2	172.16.4.82
S7AG2E1	172.16.4.83
S7AG2E2	172.16.4.84
S7AG2E3	172.16.4.85
S7C1	172.16.4.46
S7C2	172.16.4.47

Step 6 Filter devices in the Device table by entering S7C in the hostname. The Device table displays only devices that match the filtering criteria. However, filtering the Device table does not filter the devices visually on the topology map. The only way to visually filter devices on the geographical or logical maps is to use device groups.

The screenshot shows the same network topology map as above. The 'Devices' table on the right is now filtered to show only two devices:



Host Name	Node IP	Oper...	Reac...	Product Type
S7C1	172.16.4.46	OK	Re...	ciscoCRS16S
S7C2	172.16.4.47	OK	Re...	ciscoCRS16S

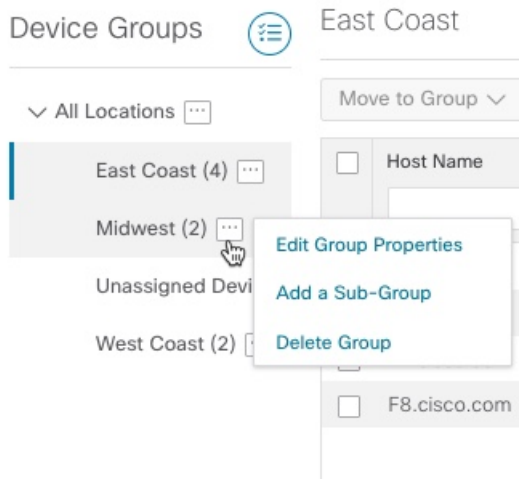
The filter 'S7C' is applied to the Host Name column.

Create and Modify Device Groups

Device groups and assignment of devices to the groups can be done either manually (as described in this section) or automatically (as described in the next section).

Step 1 From the main menu choose **Device Management > Groups**.

- Step 2** To add a new sub-group, click  next to **All Locations**. A new sub-group gets added under **All Locations**.
- Step 3** To edit, delete, or add a sub-group under an existing group, from the Device Groups tree, click  next to a group.



- Step 4** Choose to add, delete, or edit (rename or move) a group. If you delete a group, all devices that belong to that group are moved to the Unassigned Devices group. Also, deleting a group deletes all the sub-groups under it.

Note Devices can belong to only one device group.

- Step 5** Click **Save**.

Enable Dynamic Device Grouping


You can create a rule to dynamically create device groups and automatically add unassigned devices to these groups using a Regular Expression (regex) on the device hostname. Any newly added or discovered devices that match the rule will be placed in the appropriate group.



Note Dynamic rules do not apply to devices that already belong to groups. You must move them to Unassigned Devices if you want them to be considered by the rule.

Before you begin

While you can follow examples given in the Dynamic Groups dialog, it is helpful to be familiar with Regular Expressions.

- Step 1** From the main menu choose **Device Management > Groups**.
- Step 2** Click  to open the **Manage Dynamic Grouping Rule** window.
- Step 3** Click **Show more details and examples** to help you fill out the required Host Name and Group Name fields.


- Step 4** If there are any existing devices in the Unassigned Devices group, click **Test Rule** to view a sampling of what type of group names will be created.
- Step 5** Check the **Enable Rule** checkbox. After the rule is enabled, the system checks for unassigned devices every minute and will assign them to the appropriate group based on the rule.
- Step 6** Click **Save**.
- Step 7** Groups that are created this way initially appear under Unassigned Groups (created when a rule is enabled for the first time). Move newly created groups to the desired group hierarchy.
- Step 8** To move newly created Unassigned groups to the correct group, do the following:
- Select ... next to All Locations and click **Add a Sub-Group**.
 - Enter the New Group details and click **Save**.
 - Select ... next to the unassigned created dynamic group and select **Edit Group Properties**.
 - Click **Change Parent Group** and select the appropriate group.

Customize Map Display Settings

You can configure visual settings on the topology map based on your needs and preferences. You can do the following:

- [Customize the Display of Links and Devices, on page 14](#)
- [Set Display Behavior of Device Groups for TE Tunnels , on page 14](#)

Customize the Display of Links and Devices

To set device and link map display preferences, choose **Topology** and click  on the topology map.

- Click **Links** to show aggregated links and how links should be colored so that you can easily see their state and utilization status. By default, aggregated links will be differentiated from single links on the map and links will be colored based on link utilization thresholds. Administrators can change the utilization thresholds and their corresponding colors.
- Click **Devices** to show the device state and how the devices should be labeled. By default, the device state is shown on the map and the host name is used to label devices.

Set Display Behavior of Device Groups for TE Tunnels

You can configure what is shown on the topology map when a device group is selected and a device in the selected TE tunnel does not belong in the group. To set the behavior, choose **Admin > Settings > User Settings** and select one of the behavior options.

By default, the user is asked each time to choose the device group view.

Customize the Display of Traffic Engineering

To set Traffic Engineering display preferences, choose **Traffic Engineering** > **Traffic Engineering** and click  on the topology map

- Click **Links** to show aggregated links and how links should be colored so that you can easily see their state and utilization status. By default, aggregated links will be differentiated from single links on the map and links will be colored based on link utilization thresholds. Administrators can change the utilization thresholds and their corresponding colors.



Note Dual stack links (although aggregate) are shown as one single line.


- Click **Devices** to show the device state and how the devices should be labeled. By default, the device state is shown on the map and the host name is used to label devices.
- Click **Metrics** to show IGP, TE, and delay (latency) metrics when viewing IGP paths. By default, these metrics are not enabled.



Note Metrics cannot be shown when the IGP path goes over an aggregate link. If you try to view an IPv6 network that has both IPv4 and IPv6 links you need to check the **Show Participating Only** checkbox to see IPv6 metrics.

- Click **Flex Algo** to show the Flex Algorithm paths. For more information see [Visualize Flexible Algorithms](#).

Configure Timeout Settings

To configure timeout settings for the provisioning and retrieval of data for SR-TE policies, RSVP-TE tunnels, Bandwidth on Demand and IGP paths, select **Administration** > **System Settings** > **Timeout Configuration** tab. Enter the timeout duration options. For more information, click .



Note Timeouts change the response time of each of the actions if SR-PCE is slow in responding. You can modify the settings for a large scale topology or to address slow SR-PCE response due to latency or load.

Save Topology Views for Easy Access

When you rearrange the devices and links on a map, your changes are not normally saved. To easily access a useful map layout, you can save it as a named custom view and quickly retrieve it, without having to rearrange the map each time. This is especially useful when managing large networks with many devices.

When you save a custom view, the following settings will be saved:

- Whether it is a geographical or logical map.
- Device positions in the logical map layout.
- Device and link display settings
- Any filters used in the Device and Traffic Engineering tables



Note All custom views can be seen by all users. However, only users with the admin role or users that created the custom view can modify the view.

Step 1 Customize the current map view until it contains only the information you want and until the layout meets your needs.

Step 2 When you have the view the way you want it, click **Save View**.

The screenshot shows a network management interface. On the left, a map of the United States displays a network topology with nodes labeled xrv9k-5, xrv9k-3, xrv9k-7, xrv9k-6, xrv9k-4, and srpoe1. On the right, a sidebar titled 'Traffic Engineering' is visible, showing various metrics and a 'Save View' button highlighted with a red box. Below the sidebar, there is a table for SR POLICY with columns for Headend, End, C, Ad, Op, and Actions.

	Hea...	End...	C...	Ad...	Op...	Actions
<input type="checkbox"/>						...
<input type="checkbox"/>	xrv9k-5	xrv9k-7	123...	↑	↑	...
<input type="checkbox"/>	xrv9k-5	xrv9k-7	222	↑	↑	...
<input type="checkbox"/>	xrv9k-5	xrv9k-7	333	↑	↑	...
<input type="checkbox"/>	xrv9k-6	xrv9k-7	607...	↑	↑	...
<input type="checkbox"/>	xrv9k-5	xrv9k-7	6521	↑	↑	...

Step 3 Enter a unique name for the new custom view and click **Save**. You can later modify the view (click **Select a saved view**) and choose to edit the topology, rename, or delete the view.